UNIVERSITY OF JOHANNESBURG

PROGRAM:	***NURSING AND OPTOMETRY***
SUBJECT:	**PHYSIOLOGY 2**
CODE :	**NURSING - HPH 2B10 AND 2B20** **OPTOMETRY - HPH 02B2 (HPH20B2)**
DATE :	**EXAMINATION 30 NOVEMBER 2016**
DURATION:	**180 Minutes (90 minutes per section)**
WEIGHT :	**50:50**
TOTAL MARKS:	**SECTION A = 60** **SECTION B = 60**

EXAMINERS	**: DR S EAGLETON**
MODERATORs	**: MRS P DE LANGE-JACOBS**
NUMBER OF PAGES	**: 5 PAGES**

REQUIREMENTS:	**1 x EXAMINATION SCRIPT**
CALCULATOR:	**CALCULATORS PERMITTED (CELL PHONE MAY NOT BE USED)**

SECTION A

NURSING HPH 2B10

OPTOMETRY HPH 02B2

Answer this section in the answer book provided. Number the questions exactly as they are numbered on the question paper.

Keep subsections of questions together.

Question 1 Endocrine system

1.1	The following questions are about the water soluble hormones:	
1.1.1	Name the different classes of water soluble hormones.	4 x ½ = (2
1.1.2	Describe how water soluble hormones recognize and activate their target and what the response of the effector will be.	12 x ½ = (6)
1.2	Discuss the hormonal control of blood glucose levels in the body.	8 x ½ = (4)
1.3	Explain the role of ADH (anti diuretic hormone) during dehydration of the body.	6 x ½ = (3)

[15]

Question 2 Blood

2.1	Describe the recycling (turnover) of red blood cells.	10 x ½ = (5)
2.2	Name five types of white blood cells and give one function for each type.	10 x ½ = (5)

[10]

Question 3 Heart

3.1	Relate the electrical events as seen on an ECG to the mechanical events of heart.	6 x ½ = (3)
3.2	Distinguish between isovolumetric contraction and isovolumetric relaxation during the cardiac cycle.	(2)
3.3	Explain why hypertension is 'hard on the heart'.	(2)
3.2.1	Define cardiac output.	(1)
3.2.2	Briefly explain the four primary factors that play a role in regulating the cardiac output.	8 x ½ = (4)
3.3	Explain how each of the following factors affect the cardiac output (CO):	
3.3.1	An increase in blood calcium levels	(1½)
3.3.2	An increase in venous return to the heart	(1½)

[15]

Question 4 Blood vessels

4.1.1	Explain how the nett filtration pressure (NFP) at the capillary bed is calculated.	(4)
4.1.2	Explain the effect of a positive and negative NFP at capillary bed.	(1)
4.2	Discuss the role of the lymphatic system in preventing oedema.	(3)
4.3	Outline the events of the reflex response to restore homeostasis when there is an increase in the carbon dioxide and a drop in pH and oxygen levels in the body.	14 x ½ = (7)

[15]

Question 5 Lymph

5.1	Relate the structure of the lymph node to its functions.	(5)

[5]

TOTAL SECTION A = 60

SECTION B

NURSING HPH 2B20

OPTOMETRY HPH 02B2 (HPH20B2)

Answer this section in the answer book provided. Number the questions exactly as they are numbered on the question paper.

Keep subsections of questions together.

Question 1 Immune system

1.1 Explain how Class II MHC (major histocompatibility complex) proteins will be present foreign antigens. (5)

1.2 Which defense cells will be activated by Class II MHC proteins? (1)

1.3 Discuss the secretion and functions of three types of interferons. 6 x ½ = (3)

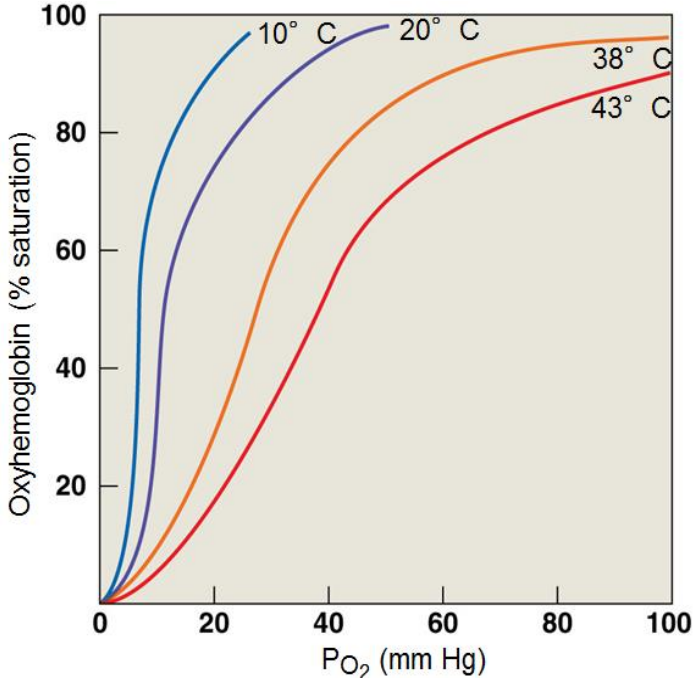
1.4 Outline six (6) ways in which antigen-antibody complexes function. (6)

[15]

Question 2 Respiratory system

2.1 Describe four (4) factors that will play a role to ensure efficient gas exchange in the lungs. (4)

2.2 Use the graph to explain the role of temperature in oxygen delivery to the tissues. 6 x ½ = (3)



2.3 Distinguish between the effects of hypoventilation and hyperventilation on the body. 6 x ½ = (3)

[10]

Question 3 Digestive system

3.1 Explain the neural and hormonal control of digestion related to the cephalic phase of gastric digestion. 12 x ½ = (6)

3.2 Relate the functions of the pancreatic acinar cells to the digestion of carbohydrates and proteins in the small intestines. 8 x ½ = (4)

3.3 Relate the structure of the liver lobule to its metabolic functions. (5)

[15]

Question 4 Urinary system

4.1 Explain the processes involved in urine formation. (10)

[10]

Question 5 Reproductive system

5.1 Outline the events during the ovarian cycle also indicating the hormonal regulation of the cycle as well as the hormones produced by the ovarian structures. 20 x ½ = (10)

[10]

TOTAL SECTION B = 60